

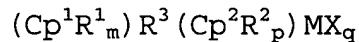
Appln. No. 09/637,791  
Amendment dated June 9, 2004  
Reply to the Office Action of March 9, 2004

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of the claims in this application.

Listing of Claims:

1. (Currently amended) A process for the polymerization of  $\alpha$ -olefin to provide a liquid polyalphaolefin polyalphaolefin homo- or copolymer, the process comprising polymerizing at least one olefin in the presence of hydrogen and a catalytically effective amount of catalyst comprising the product obtained by combining a metallocene procatalyst with a cocatalyst, the metallocene procatalyst being at least one compound of general formula:



wherein Cp<sup>1</sup> of ligand (Cp<sup>1</sup>R<sup>1</sup><sub>m</sub>) and Cp<sup>2</sup> of ligand (Cp<sup>2</sup>R<sup>2</sup><sub>p</sub>) are the same or different cyclopentadienyl rings, R<sup>1</sup> and R<sup>2</sup> each is, independently, hydrogen or a hydrocarbyl, halocarbyl, heterocarbyl, hydrocarbyl-substituted organometalloid or halocarbyl-substituted organometalloid group containing up to about 20 carbon atoms, m is 0 to 5, p is 0 to 5 and two R<sup>1</sup> and/or R<sup>2</sup> substituents on adjacent carbon atoms of the cyclopentadienyl ring associated therewith can be joined together to form a ring containing from 4 to about 20 carbon atoms, R<sup>3</sup> is a bridging

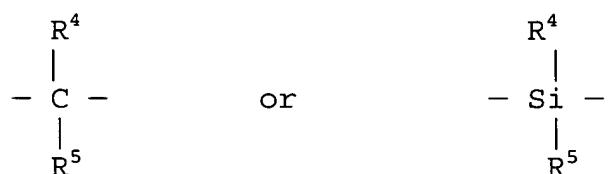
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group bridging  $Cp^1$  with  $Cp^2$ , M is a transition metal having a valence of from 3 to 6, each X is a non-cyclopentadienyl ligand and is, independently, halogen or a hydrocarbyl, oxyhydrocarbyl, halocarbyl, hydrocarbyl-substituted organometalloid, oxyhydrocarbyl-substituted organometalloid or halocarbyl-substituted organometalloid group containing up to about 20 carbon atoms, and q is equal to the valence of M minus 2, the cocatalyst being an aluminoxane and it being provided that ligand ( $Cp^1R^1_m$ ) is different than ligand ( $Cp^2R^2_p$ ) and bridging group  $R^3$  contains at least two bulky groups.

2. (Original) The process of Claim 1 wherein the metallocene procatalyst possesses the structure



in which groups  $R^4$  and  $R^5$  each, independently, is, or contains, a cyclic group of from 6 to about 20 carbon atoms, from 0 to 3 heteroatoms and hydrogen as the remaining atoms.

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3. (Original) The process of Claim 2 wherein in the metallocene procatalyst, the cyclic group is a cycloalkyl, heterocycloalkyl, cycloalkenyl, heterocycloalkenyl, aryl, heteroaryl, alkaryl, alkylheteroaryl, aralkyl or heteroaralkyl group.

4. (Original) The process of Claim 3 wherein in the metallocene procatalyst, ligand ( $Cp^1R_m^1$ ) is unsubstituted cyclopentadienyl, ligand ( $Cp^2R_p^2$ ) is substituted or unsubstituted indenyl or fluorenyl,  $M^1$  is zirconium,  $R^4$  and  $R^5$  each is phenyl and each ligand X is chlorine.

5. (Original) The process of Claim 1 wherein the metallocene procatalyst based in terms of the transition metal M, is present in an amount from 0.0001 to about 0.02 millimoles/liter and the aluminoxane cocatalyst is present in an amount from 0.01 to about 100 millimoles/liter.

6. (Original) The process of Claim 1 wherein the  $\alpha$ -olefin contains from 2 to about 20 carbon atoms.

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7. (Currently amended) The process of Claim 1 wherein the  $\alpha$ -olefin contains from about 6 to  $\infty$  about 12 carbon atoms.

8. (Original) The process of Claim 1 wherein the  $\alpha$ -olefin is 1-decene.

9. (Original) The process of Claim 1 wherein the metallocene procatalyst is combined with the aluminoxane cocatalyst and hydrogen in any order thereof and in the presence or absence of  $\alpha$ -olefin.

Claims 10 to 37, (Canceled)